


# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 47343	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/IT2004/000253	International filing date (day/month/year) 07.05.2004	Priority date (day/month/year) 15.05.2003	
International Patent Classification (IPC) or national classification and IPC B31C3/00, B31C11/00			
Applicant FABIO PERINI S.P.A. et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand  06.12.2004		Date of completion of this report  01.08.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Farizon, P  Telephone No. +49 89 2399-7893	



INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITYInternational application No.  
PCT/IT2004/000253

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-10 as originally filed

**Claims, Numbers**

1-25 received on 06.12.2004 with letter of 29.11.2004

**Drawings, Sheets**

1/5-5/5 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IT2004/000253

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	2,19,20,24,25
	No: Claims	1,3-18,21-23
Inventive step (IS)	Yes: Claims	
	No: Claims	1-25
Industrial applicability (IA)	Yes: Claims	1-25
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: DE 823 608 C

D2: US 2489503

D3 : JP 59 009044

D4 : JP 11333219

D5 : DE 295 03 127

2. Novelty

2.1 Claim 1 :

D1 discloses a machine for producing a tubular product by means of helical winding and glueing of strips of web material (p.1, l.3-10), comprising a mandrel (Zylindrische Stab 7) and a winding member (Förderräder) to helically wind two overlapped and staggered strips (5,6) of web material around said mandrel, comprising a pressure member (Wickelrädern 8,9) cooperating with the mandrel and combined to said winding member (as acknowledged by the applicant), disposed along the path of the tubular product, the pressure exerted by said member promoting adhesion of the strips forming the product (p.1,l.33 to p.2,l.4).

Hence claim 1 is not new.

2.2 Claim 21 :

The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 21 which therefore is also considered not new.

2.3 Claims 3-18,21,22 :

Dependent claims 3-18,21,22 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see documents D2,D3,D4,D5 and the corresponding passages cited in the search report.

3. Inventive step

**3.1 Claim 2 :**

Newly added claim 2 (depending on claim 1) involves the further feature of a winding member comprising a belt forming a helical turn about the mandrel and about the strips being wound. Such belts as winding members are widely use in tube forming machine, see e.g. D5.

Hence claim 2 is not inventive.

**3.2 Claims 19,20,24,25 :**

Dependent claims 19,20,24,25 involve the further feature that the pressure member is upstream or downstream the winding member, i.e. the pressure member is separate and distinct from the winding member.

The closest prior art is D5 from which the subject matter of claims 19,20,24,25 differs in that at least two plies are joined.

The problem to solve is to make a multi-ply tube.

It is known to make multi-ply tube by simply feeding two or more plies to the mandrel, see e.g. D1 and D3.

The skilled person would solve the abovementioned problem by feeding further strips of material : this does not require any inventive adaptation to the machine according to D5.

EPO - DG

JC09 Rec'd PCT/PTO 24 OCT 2005

06.12.2004 Amendments under Art. 34 PCT

New CLAIMS

1. <sup>(79)</sup> A machine for producing a tubular product (T) by means of helical winding and gluing of strips of web material, comprising a mandrel (4) and a winding member (7) designed and arranged to helically wind at least two overlapped and staggered strips (S1, S2) of web material around said mandrel, characterized by at least one pressure member (31) cooperating with said mandrel and combined to said winding member (7), disposed along the path of the tubular product being formed on said mandrel, the pressure exerted by said pressure member promoting adhesion of the strips forming the product.
2. Machine as claimed in claim 1, characterized in that said winding member comprises a belt (7), forming a helical turn about the mandrel and about the strips being wound around the mandrel.
3. Machine as claimed in claim 1 or 2, characterized in that said pressure member comprises at least a wheel (33; 33A; 33B) and an actuator (35; 35A; 35B) to stress the wheel and the mandrel against each other.
4. Machine as claimed in claim 3, characterized in that said wheel is positioned to act on the outer surface of the tubular product, at the level of the edge line (L1) of adjacent turns of the outermost strip (S1) of web material forming the tubular product (T).
5. Machine as claimed in claim 4, characterized in that said the circular edge of said wheel is disposed with an inclination, with respect to the axis (A) of the mandrel, essentially equal to the inclination of the helical winding of said strips (S1, S2) of web material.
6. Machine as claimed in one or more of claims 3 to 5, characterized in that the circular edge of said wheel has a series of protuberances (34).
7. Machine as claimed in claim 6, characterized in that said protuberances have the form of a tothing.
8. Machine as claimed in one or more of claims 3 to 7, characterized in that the inclination of the axis of rotation (B) of the wheel (33; 33A; 33B) with respect to the axis (A) of the mandrel (4) is adjustable.
9. Machine as claimed in one or more of claims 3 to 8,

characterized in that said wheel (33; 33A; 33B) is carried by a support (39, 41; 39A, 41A; 39B, 41B) sliding in a sleeve (43; 43A; 43B), and torsionally constrained to said sleeve.

10. Machine as claimed in claims 8 and 9, characterized in that said sleeve can be locked in an angularly adjustable position with respect to a fixed load-bearing structure (49).

11. Machine as claimed in claim 10, characterized in that said sleeve (43; 43A, 43B) comprises a flange (45; 45A, 45B) with slotted holes (47) to lock said sleeve in an angularly adjustable position.

10 12. Machine as claimed in one or more of the previous claims, characterized in that said pressure member (31) comprises at least a supporting element (53) for said mandrel (4).

13. Machine as claimed in claims 3 and 12, characterized in that the pressure member comprises two angularly staggered supports (53) that provide the mandrel with a reaction force to the stress applied by said wheel (33).

14. Machine as claimed in claim 13, characterized in that the contact points between said wheel and the product being formed on the mandrel and between said at least one support and said product lie approximately on a plane orthogonal to the axis of the mandrel.

15. Machine as claimed in one or more of the previous claims, characterized in that said pressure member (31) comprises two wheels (33A, 33B) acting on the tubular product (T) being formed around said mandrel (4).

16. Machine as claimed in claim 15, characterized in that said two wheels are positioned to act on the outer surface of the tubular product, one at the level of the joining line (L1) of adjacent turns formed by the outermost strip (S1) of web material, and the other at the level of the joining line (L2) of adjacent turns formed by the innermost strip (S2) of web material.

17. Machine as claimed in claim 15 or 16, characterized in that said two wheels are disposed staggered by around 180° about the axis (A) of the mandrel (4) and in a position wherein the straight line uniting their contact points with the tubular product being formed on the mandrel is approximately orthogonal to the axis of the mandrel.

18. Machine as claimed in one or more of the previous claims,

characterized in that said wheel(s) (33; 33A, 33B) is/are motorized.

19. Machine as claimed in one or more of the previous claims, characterized in that said pressure member is positioned downstream of the winding member.

5        20. Machine as claimed in one or more of claims 1 to 18, characterized in that said pressure member is positioned upstream of the winding member.

21. A method for producing a tubular product wherein at least a first strip (S1) and a second strip (S2) of web material staggered from each other  
10 are wound around a winding mandrel (4) by means of a winding member (7), the two strips being glued to each other, characterized in that pressure is applied to the outer surface of the tubular product being formed around said mandrel, along the path of the product being formed around said mandrel to stabilize glue adhesion between said two strips, by means of an additional  
15 pressure member arranged along said mandrel.

22. Method as claimed in claim 21, characterized in that said pressure is applied along the edge (L1) of a strip forming the adjacent turns that form the outermost layer of said tubular product.

23. Method as claimed in claim 21 or 22, characterized in that said  
20 pressure is applied to the outer surface of the tubular product at the level of the edge (L2) of the strip (S2) of web material, forming an inner layer of the tubular product.

24. Method as claimed in one or more of claims 21 to 23, characterized in that said pressure is applied downstream of the winding  
25 member.

25. Method as claimed in one or more of claims 21 to 23, characterized in that said pressure is applied upstream of the winding member.